Critical Ecosystem Initiative in Region 7

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The EPA Region 7 Environmental Assessment Team seeks to identify the location of ecosystems that are critically important to the biological diversity and ecological health in the states of Iowa, Kansas, Missouri, and Nebraska. The team has undertaken a two-year project to identify "critical ecosystems" to aid Region 7 programs in setting priorities for protection. The team's analytical approach to identifying terrestrial critical ecosystems is a determination of priorities based on ecological importance of resources and threats to those resources. An irreplaceability analysis of remnant areas will be performed, which will identify areas that should be protected to achieve a set of conservation targets. Abiotic habitats must first be modeled and overlain with current land cover data to infer and quantify differences in vegetation. With this information, historic vegetation can be modeled and quantified. Ecological significance will be calculated for ecoregion subsections through a characterization of ecological diversity in each section. One of the final steps is to calculate threats to the sections. Threat is assigned using algorithms for urban land demand, agricultural stress, and potential threats from toxic point sources. Together these layers comprise an Ecological Risk Surface. Areas with high significance (they are highly irreplaceable) that have high risk due to threats (such as pollution) are the terrestrial critical ecosystems. The approach to identifying riverine critical ecosystems utilizes an aquatic gap methodology and an aquatic ecological classification framework. Aquatic ecological system types and valley segment types with high quality are selected as priority assessment areas within ecological drainage units. The objective of these methods is to classify and map relatively distinct riverine ecosystems at multiple spatial scales in order to provide a geographic framework for effective biodiversity conservation.